OVERTIME WORK DETERMINANTS
OF MEN AND WOMEN IN SLOVAKIA

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A b s t r a c t

The paper deals with the supply side of the Slovak labour market. The main goal of the present study was to examine what variables contribute to the explanation of working over-time (e.g. devoting more than 40 hours per week to paid work) separately for women and men. A binomial logistic regression was used and factors were identified separately for men and women. The data were drawn from the results of primary research conducted in the year 2018.

Results suggest that the probability of working overtime is higher for both men and women with higher income. It seems that the substitution effect of an increase in income dominates the income effect. Household circumstances influence the probability of one's working overtime. In those multi-member households where the husband has higher level of education than the wife, the husband will more likely work overtime and women will be less likely to work overtime. The presence of very young children in households has a significant impact on the reporting of women working overtime. Women with preschool children were less likely to work overtime than women in households in which there were older children or households without children.

DETERMINANTY PRACY PO GODZINACH MĘŻCZYZN I KOBIET NA SŁOWACJI

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S ł o w a   k l u c z o w e: rynek pracy, płatna praca, czas w płatnej pracy, nadgodziny.

A b s t r a k t

Artykuł dotyczy strony podażowej słowackiego rynku pracy. Głównym celem badania było sprawdzenie, jakie zmienne wyjaśniają przyczyny pracy w godzinach nadliczbowych (na przykład poświęcenie ponad 40 godzin tygodniowo na pracę zarobkową), oddzielnie dla kobiet i mężczyzn. Zastosowano dwumianową regresję logistyczną, a czynniki zidentyfikowano osobno dla mężczyzn i kobiet. Dane pochodzą z wyników badań pierwotnych przeprowadzonych w 2018 roku.

Wyniki sugerują, że prawdopodobieństwo pracy w godzinach nadliczbowych jest wyższe u pracowników o wyższych dochodach, zarówno u mężczyzn, jak i kobiet. Wydaje się, że jest to efekt substytucyjny wzrostu dochodu. Okoliczności domowe wpływają na prawdopodobieństwo pracy w nadgodzinach. W wieloosobowych gospodarstwach domowych, w których mąż ma wyższe wykształcenie niż żona, mąż będzie częściej pracował w nadgodzinach, a kobiety będą mniej skłonne do pracy w nadgodzinach. Obecność bardzo małych dzieci w gospodarstwach domowych ma znaczący wpływ na zgłaszanie się kobiet do pracy w nadgodzinach. Kobiety z dziećmi w wieku przedszkolnym rzadziej pracowały w godzinach nadliczbowych niż kobiety, które miały starsze dzieci lub ich nie miały.

Introduction

The labour market is the place where demand and supply of the labour force meet. On the demand side, there are companies demanding certain amounts of hours of work which is supplied by the households. Compared to labour supply, demand for labour is more flexible and is derived mainly from the demand for goods and services produced by the labour. The behaviour of labour supply is a central issue in the economy, since labour is one of the main factors of production. Hence in order to properly examine the output fluctuations in any country, or to explore the potential of further economic growth, analysis of labour is of immense importance. The aggregate labour supply in a country is the result of a decision made by individuals. For this reason, a micro point-of-view focusing on individual determinants of labour supply is necessary.

Our study deals with the supply side of the labour market in Slovakia. Since Slovakia is currently undergoing changes such as labour shortages linked to partial labour imbalances, the aging of the labour force, and the brain drain (Štefánik *et al.*, 2018); the study of determinants of the supply of labour at the microeconomic level is more than necessary. There are two things that individuals decide in labour supply theory. Firstly, whether to participate in labour

market activities (working) or not to participate in labour market activities (not working). Second, the decision to determine how much time is provided for labour market activities (number of hours worked) when deciding to participate in the labour market (Yunisvita *et al.*, 2017).

This paper deals with the latter point of view. Therefore, by studying the individual supply of labour we will understand the number of hours a person spends working at paid work in an average week. According to the number of hours worked and the national legislation in Slovakia, the terms of full-time employment; part-time employment and overtime are used. According to the Labor Code (§ 85 par. 5), the standard weekly working time in Slovakia in the case of full-time employment (without overtime) is 40 hours. Overtime is defined as the work performed by an employee on the employer's order or with the employer's consent over and above the specified working time resulting from a predetermined working time schedule and work carried out outside the working change schedule. It is typical for Slovakia that a majority of people are working full-time, and only a minimal share of employed Slovaks work a part-time job. The average number of Slovaks employed part-time in the period 2002-2014 was approximately 5%, while the OECD average was 15% (*OECD Factbook…*, 2016). So the main decision made by most of the employed people who have entered the labor market in Slovakia is how much time is provided for labour market activities (number of hours worked), and it is not a decision about working part-time or working full-time. Rather it is decision whether to work overtime or not. There is a limitation which concerns the length of overtime. According to the Labor Code (§ 85 par. 9), the maximum average weekly working time including overtime in Slovakia cannot exceed 48 hours. Working overtime has some positives as well as negatives. The aim of this study is not to evaluate whether the cost associated with working overtime outweigh the benefits, rather the aim of this paper is to better understand what could determine why people choose to work overtime. To the best of our best knowledge, there is no similar study in Slovakia.

When it comes to a discussion about labour supply concerning both labour market participation and hours spent at paid work, there are huge differences between genders. In all EU countries, women's labour participation is lower than men's. Women in employment tend to work fewer hours, work in lower-paying sectors, and occupy lower-ranking positions than men, resulting in considerable gender pay and earnings gaps. These differences are to some extent due to deep-rooted traditional gender roles, but are also due to economic incentives (*European Semester Thematic…*, 2017), which again call for a microeconomic point of view into labor supply. The same applies to Slovakia. According to the OECD (*OECD Factbook…*, 2019), the employment rate for men and women in 2015 was 69.4% and 55.9%, respectively. When examining the individual labor supply in terms of the number of hours worked, the gender became a significant variable (Yunisvita *et al.*, 2017). Also, the allocation of time devoted to unpaid work

in Slovakia during the day is different for men and women (Kika & Martinkovičová, 2015). On the basis of the foregoing differences, it is reasonable to identify the determinants of labor supply separately for women and men.

Only by obtaining data from the primary survey from employed individuals, knowing about their socio-demographic characteristics as well as other circumstances, is it possible to identify the results of the decisions about the allocation of time in favour of paid employment. Since time is a limited resource that cannot be reproduced but only efficiently redistributed, the study of the time allocation in favour of paid employment is one of the key issues concerning the actual conditions in the Slovak labour market.

There are several factors that determine a person's decision about how much time to supply to labour market activity, the importance of which may vary depending on the circumstances. The identification of determinants influencing the time allocation for paid employment specifically for men and women in particular provides a more aggregated view of the decision to allocate time in society. The originality of primary data on employed respondents provides an opportunity to identify and compare different time allocation factors simultaneously. The results could serve as an inspiration for implementing different labour market policies and increasing their effectiveness in order to stimulate the potential workforce. Just finding differences in the labour supply between men and women provides a number of conclusions about activities designed to promote reconciliation of work and family life.

After this introduction, the remainder of this paper is organized as follows. The upcoming Section 2 gives a concise literature review dealing with the determinants of labour supply, after which Section 3 follows, which describes the data employed and the method used in the analysis. Section 4 discusses the results, and Section 5 provides a conclusion.

Literature review

The labour-supply decision can be broken into two parts, the decision to participate in the labour market and the determination of the number of hours people work, conditional upon labour market entry (Birch, 2005). There are various factors which could influence the time spent in paid work. In many economic textbooks, one can find the explanation offered by neoclassical economic theory that the main determinant of individual labour supply is the wage rate, and that based on this assumption the labor supply curve is constructed in a way which reflects the "labor leisure" trade-off described by two opposite effects, e.g. income and the substitution effect. The substitution effect refers to the idea that, with a higher wage rate, time is more valuable and people try to minimise time spent on the production and consumption of goods within the household, leading to an increase in working hours (Becker, 1965; Gronau,

1977). The income effect increases the demand for leisure, thus decreasing the hours supplied to the market. The relationship between wages and weekly hours of work was examined by Borjas (1980), for example. As expected, the empirical results of the effects of wage rate on working hours are mixed. For example de Meester, Mulder and Fortuijn (2007) have found a negative impact of the wage rate on hours worked for men in the Netherlands, which suggests that the income effect outweighs a possible substitution effect. Bhattarai (2017) has come to the opposite result. His estimation indicates that the substitution effect of an increase in the wage rate dominates the income effect. However, as pointed out by Borjas (1980), the problem often arises because of the empirical definition of the wage-rate variable. Instead of wage, some authors are using individual income as an explanatory variable of the number of working hours. For example, Medhikarimi *et al.* (2015) found that a simple regression model (testing the log of adjusted personal income against hours worked) demonstrates that personal income has a positive relationship with hours worked, while the multiple regression model shows that this effect diminishes as income level increases. Apart from the income / wage rate, sociodemographic characteristics like age, education, number of children in households or number of household members could also determine the amount of time people spend in paid work. Carson, Krsinich and Kell (2000) found that the age group is among the predictors of the amount of time spent in paid work for employed people.

Human capital theory suggests that profit from paid work increases with human capital. Human capital can be expressed by one's level of education. Assuming that individuals seek to maximize profit, one would expect that having a higher level of education would lead to more hours spent in paid work. (de Meester *et al.*, 2007). When reviewing the published empirical literature on the determinants of the labour supply of Australian women, Birch (2005) mentions studies where more educated women tended to work a greater number of hours than their less-well educated counterparts in Australia. Kuhn and Lozano (2006) come to similar results: the more educated men were more likely to work longer hours.

In the case of households with two or more members, according to the new home economists in addition to individual human capital, differences in human capital between the partners are important with respect to the time spent in paid work (Farkas, 1976). Being more highly educated than one's partner could therefore be expected to have a positive impact on the time spent in paid work, since the person with the most human capital will specialize into market work and the other into unpaid household work. Working patterns of partners would be mutually interconnected (Lewin-Epstein *et al.*, 2006) so the number of hours spent in paid employment by one partner could influence the number of hours spent in paid work by the other partner. The higher qualified partner would spend more time in paid work, while the lower qualified partner would spend less time in paid work. The amount of time people spend in paid employment

could also be affected by the amount of time they spent on unpaid work. This is especially the case for women since household work remains highly segregated and predominantly a woman's responsibility (Shelton & John, 1996). One could expect that a higher burden of domestic tasks would decrease the number of hours spent in paid employment. Most studies of the female labour supply emphasize the importance of children. The presence of children is generally argued to reduce a woman's likelihood of participating in the labour market and working many hours (e.g. Kawaguchi, 1994).

Labour-supply decisions could also be affected indirectly by institutional factors. According to Bittman (1999), since there is a limited scope for women to re-negotiate their role in relation to family responsibilities within the home, appropriate public policies to accommodate women's family needs are important to women's success in the labor market. According to de Meester, Mulder and Fortuijn (2007) the degree of urbanisation could be an important determinant of time spent in paid work, since the labour market opportunities are more plentiful in strongly urbanised areas; there, more jobs are on offer and more supporting services such as childcare are available, which in turn will increase the number of hours worked.

The main goal of the present study is to examine what variables contribute to the explanation of working overtime (e.g. devoting more than 40 hour per week to paid work) separately for women and men in Slovakia. In line with the preceding discussion we hypothesize that the income will be an important determinant of working overtime. However, we can hardly predict whether the substitution effect will outweigh a possible income effect or vice versa. We also hypothesize that time spent by commuting to and from work does affect the working of overtime, since time spent commuting „adds" another time to the length of paid work. We also hypothesize that household circumstances like the presence of preschool children and the time spent in unpaid work in the household will decrease the probability of working overtime especially for women. In line with the new home economists, we also expect that differences in human capital between the partners and time spent in paid work by one partner will be an important determinant of the probability to work overtime for both men and women.

Data and Methods

The data for these analyses were collected in 2018 within the project VEGA 1/0621/17 carried out at the Faculty of Economics, Matej Bel University, Slovakia using a questionnaire survey in 2018. The research sample consisted of 1819 individuals within 732 households. We used a quota sampling to achieve

a representative distribution in terms of the number of household members and the geographical regions.

The dependent variable of time spent in paid work was measured as the actual number of hours respondents reported that they worked per week. This measurement was preferred to the contractual number of hours worked, because overtime was included and this is crucial for our analysis. This data also included alternative work schedules that enable people to work fewer hours than their contractual hours, which in Slovakia is rather an exception than the rule. For the purposes of our analysis, we have restricted the sample to the individuals who spent more than 0 hours a week in paid work, e.g. only employed people were included in the analysis. After these adjustments, we ended up with a sample of 560 men and 496 women.

The main goal of the present study was to identify overtime work determinants separately for women and men. Despite the fact that time spent in paid work obtained from the answers to the questionnaire is a continuous variable and it is tempting to use the OLS method for analysis, we took into consideration the fact that people in Slovakia usually do not decide precisely about the certain time they spent in an average week in paid work, rather they could decide whether to work full-time, part-time or overtime. As was explained in the introduction section, to work part-time is in Slovakia rather an exception than the rule, so for this reason we focused on full-time employment and the decision to work longer than the standard weekly working time in Slovakia, which is according to the Labor Code (§ 85 par. 5) 40 hours per week. We assumed that if an employed individual worked more than 40 hours a week, it was more or less his decision and choice, which may be based on his motivation or the need to work more. For this reason, we believe that identifying the determinants affecting the probability of working more than 40 hours a week is an extremely topical issue in the case of the conditions of the SR.

For reasons that we do not want to base our analysis on, the unrealistic assumption that people can decide the exact number of their working hours, we find logistic regression analysis a more suitable method, similar to Yunisvita *et al.* (2017). In general, logistic regression is used to measure the functional relationship between the qualitative dependent variable and the quantitative and qualitative independent variables. In our study, we used binomial logistic regression. According to the above mentioned idea about the decision Slovak people are making about the time spent in paid work we have divided the time spent in paid work (which is our dependent variable) into two categories: cat. = 1; if the individual's average time spent on paid work is less than or equal to 40 hours per week; cat. = 2; if the individual's average time spent on paid work is more than 40 hours per week (working overtime).

The choice of explanatory variables X_1, X_2, ..., X_9 (described in detail in Table 1) was primarily guided by their relevance to the theory discussed in the literature review section. However, it was also influenced by the availability

Description of operational variables used in analysis

Description of the variables		
Y	time spent in paid work	= 1 if the individual's average time spent in paid work is more than 40 hours a week; = 0 if the individual's average time spent on paid work is less than or equal to 40 hours a week
X_1	age	completed years of age
X_2	commuting	average net weekly commuting to and from work by individual
X_3	unpaid work	the individual's average time spent on unpaid work per week
X_4	income	average net monthly income, cat = 1 if person is without income, cat =2 if income is ≤ 200 EUR per month; cat = 3 if income is (200; 400 >; cat = 4 if income is (400; 600 >; cat = 5 if income is (600; 1000 >; cat = 6 if income is (1,000; 1,500 >; cat = 7 if income is < than 1,500 EUR per month
X_5	population	resides in a municipality
X_6	education	highest achieved level of education; higher vocationally educated; university educated (ref = up to lower secondary)
X_7	partner education	= 0 if woman has the same level of higher education than a man; = 1 if a man has a higher education than a woman
X_8	presence of children (0-6 years)	= 0 if there are no children under 6 years of age in the household; = 1 if there is at least one child under 6 in the household
X_9	partners time in paid work per week	average weekly time spent in paid work by partner in hours

Source: own processing.

of suitable measures in the pool of variables assessed in the project that provided the data base for the present study. For example, people in Slovakia consider information about their income and wage as very private. For this reason, in the survey question dealing with their income, the income intervals were offered to them to choose from. As a consequence, income is an ordinal variable in analysis. Data processing and analysis was realized using the SPSS program packet.

Two different models were run. Each of them was made separately for men and women. Model 1 included all the respondents who performed at least one hour per week in paid work. Model 2 was focused on multi-member households in which the allocation of time of both spouses may be linked and the effect of either's employment pattern on the organization of time is likely to be contingent on the others.

Results and discussion

Table 2 shows the results of logistic regression. We first turn to the determinants of working overtime for all employed men in Model 1. According to the results, the highest achieved level of education does have a significant effect

on the probability of working overtime. The probability of working overtime is lower for university educated men than men who have achieved education up to the lower level of secondary education. Our results contradict the assumption that comes from human capital theory that having a higher level of education would lead to more hours spent in paid work (de Meester *et al.*, 2007). For a more detailed explanation of why that is so, a deeper analysis in which attitudes toward working overtime by respondents or by sector would need to be included as necessary. According to our hypothesis, individual income is a significant variable in determining men's overtime. Since men with higher income are more likely than men with lower income to work overtime, the substitution effect of an increase in income dominates the income effect. Time spent by commuting to and from work does not affect men working overtime.

Men in multi-member households (according to the results of Model 2) where the husband has more education than the wife were more likely to work overtime which is in accordance with the new home economists theory as was explained in the literature review section. But on the other hand, what was really surprising for us was finding that the odds of working overtime is higher for those men whose wife spends more time in paid work. These results contradict with the Becker specialisation theorem in his Theory of the allocation of time, which suggests that efficient time allocation between spouses occurs when only one of them participates in market work, while the other is in charge of non-market work Becker (1965). According to the results, of all women in Model 1, the only significant variable in the model which influenced the probability of women working overtime is income. In that case, similarly to men, we have identified a substitution wage effect. As can be seen in Model 2, the actual number of hours women in multi-member households spend in unpaid household work does not have a significant effect on women's working overtime. Due to the legacy of the socialist system, in which there was a duty to work, it is not unusual even nowadays for women in Slovakia to have full-time employment and also be responsible for significant amounts of unpaid domestic labour, the so called double-burden Bútorová *et al.* (2008). However, as was expected, the presence of young children had a significant impact on the reporting of women working overtime. Women with preschool children were less likely to work overtime than women in households in which there were older children or households without children. It was not surprising, since the youngest children are more dependent on adults (usually the mother) and have their own, often strict, timetables, which in turn affects the possibility of women to spend many hours in paid work. From the results, it is obvious that the study's hypothesis regarding hours worked by the partner was not confirmed for women in multi-member households. A greater number of hours worked by one's partner did not influence the probability of a woman working overtime. However, in households where the husband had greater education, the probability of women working overtime was lower.

Table 2

Logistics regression

Specification	Model 1 – All						Model 2 – Multi-member households					
	men			women			men			women		
	B	e^B	S.E.	B	e^B	S.E.	B	e^B	S.E	B	e^B	S.E.
Characteristics of men												
Single (ref. multiperson)	-0.077	0.926	0.277	–	–	–	-0.006	0.994	0.012	–	–	–
Individual income	0.158**	1.172	0.032	–	–	–	0.159***	1.172	0.036	–	–	–
Commuting to and from work	0.000	1.000	0.000	–	–	–	0.000	1.000	0.000	–	–	–
Time spent in unpaid work	0.001	1.001	0.005	–	–	–	-0.001	0.999	0.006	–	–	–
Higher vocationally educated (ref = up to lower secondary)	0.153	1.166	0.247	–	–	–	0.182	1.199	0.265	–	–	–
University educated (ref = up to lower secondary)	-0.738**	0.478	0.269	–	–	–	-0.906***	0.404	0.309	–	–	–
Characteristics of women												
Single (ref. multimember)	–	–	–	-0.449	0.639	0.317	–	–	–	–	–	–
Age	–	–	–	-0.006	0.994	0.011	–	–	–	-0.002	0.998	0.014
Individual income	–	–	–	0.153***	1.165	0.042	–	–	–	0.157***	1.170	0.048
Commuting to and from work	–	–	–	0.000	1.000	0.001	–	–	–	0.000	1.000	0.001
Time spent in unpaid work	–	–	–	-0.006	0.994	0.004	–	–	–	0.000	1.000	0.005
Higher vocationally educated (ref = up to lower secondary)	–	–	–	0.297	1.345	0.315	–	–	–	-0.030	0.970	0.36
University educated (ref = up to lower secondary)	–	–	–	-0.521	0.594	0.348	–	–	–	-0.848**	0.428	0.419
Household characteristics	–	–	–	–	–	–	–	–	–	–	–	–
Man higher educated than woman	–	–	–	–	–	–	0.739**	2.095	0.319	-0.901**	0.406	0.348
Partner's time in paid work per week	–	–	–	–	–	–	0.019***	1.019	0.007	0.011	1.011	0.008
Presence of children (0-6 years)	–	–	–	–	–	–	0.259	1.296	0.306	-0.909**	0.403	0.416
Resides in a municipality	–	–	–	0.000	1.000	0.000	0.000	1.000	0.000	0.000	1.000	0.000

***p <0.01, **p <0.05, *p < 0.10
Source: own processing.

As was mentioned before, the choice of explanatory variables in the models was primarily guided by their relevance to the theory discussed in the literature review section. However, it was also influenced by the availability of suitable measures in the pool of variables assessed in the project that provided the data base for the present study.

It is clear that the working of overtime could also be influenced by other factors which were not included in the analysis due to a lack of data. Examples may include institutional factors and the sectors of economy in which a person works. In some sectors like construction and the automotive industry, there is a higher probability of working overtime than in education.

Also, the motivation to work hard and attitudes toward paid employment were not included in the analysis; however they are relevant. Moreover, for a better understanding of the individual labour supply decision it is also useful to know the willingness of people to spend more or less time in paid employment, since the actual time they are spending in paid work may be different from the time they would like to spend in paid work. There are some studies confirming the above mentioned opinion. For example, Reynolds (2003) in examining data from the 1997 International Social Survey Programme showed that a majority of U.S. employees would prefer to work a different number of hours than they actually work. These are the specific limitations of our study. For this reason, we have interpreted the regression coefficients only in terms of their positive or negative values and we did not include more linear interpretations of the results. Nevertheless, we believe that our results are relevant and comparable to other studies that we have presented in the literature review and bring some new knowledge about the supply side of the labour market in Slovakia.

Conclusion

The main goal of the present study was to examine what variables contribute to the explanation of working overtime (e.g. devoting more than 40 hour per week to paid work) separately for women and men. To achieve the results, we used data obtained from a questionnaire survey. The logistic regression method was used in the analysis. We have processed two separate models. Model 1 included all men and women. Model 2 included men and women separately who were part of a multi-person household.

The common determinant affecting working overtime for both men and women is the income. With higher income there is a higher probability of working overtime. Since men and women with higher income are more likely than men with lower income to work overtime, the substitution effect of an increase in income dominates the income effect.

In the case of men, we have found that the highest level of education achieved is another determinant that influences the chance to work more than the standard length of a working week. In the case of women, no other determinant was identified that would increase the likelihood of working more. These results are part of Model 1.

The results for multi-member households were in Model 2, and they were different from Model 1. Being more highly educated than one's partner could therefore be expected to have a positive impact on the time spent in paid work, since the person with the most human capital will specialize into market work and the other into unpaid household work.

In homes where the man was more educated than his wife, he was more likely to work overtime as compared to his partner. Similarly, we found that in the case of men whose wives spent more time in paid work, they were also more likely to work more than the standard amount of time. In this case, they may be households that are career oriented and prefer time spent in paid work over other forms of time usage. In the case of women who were part of a multi-member household, it was confirmed that the determinant affecting overtime was the number of children in the household from 0 to 6 years of age. Our research and the results we have presented had several limitations, such as investigation the interactions between spouses.

For this reason, further research should be focused precisely on identifying spousal interactions that could help to better understand the allocation of time in a multi-member household.

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